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10/783,625

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EXAMINER

WAI, ERIC CHARLES

ART UNIT

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

| | | | |
|------------------------------|--------------------------------------|--|--|
| Office Action Summary | Application No. 10/783,625 | Applicant(s) CZAJKOWSKI ET AL. | |
| | Examiner ERIC C. WAI | Art Unit 2195 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 21 January 2009.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-45 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-45 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. Claims 1-45 are presented for examination.
2. In view of the Appeal Brief filed on 01/21/2009, PROSECUTION IS HEREBY REOPENED. A new ground of rejection is set forth below.
3. To avoid abandonment of the application, appellant must exercise one of the following two options:
 - (1) file a reply under 37 CFR 1.111 (if this Office action is non-final) or a reply under 37 CFR 1.113 (if this Office action is final); or,
 - (2) initiate a new appeal by filing a notice of appeal under 37 CFR 41.31 followed by an appeal brief under 37 CFR 41.37. The previously paid notice of appeal fee and appeal brief fee can be applied to the new appeal. If, however, the appeal fees set forth in 37 CFR 41.20 have been increased since they were previously paid, then appellant must pay the difference between the increased fees and the amount previously paid.
4. A Supervisory Patent Examiner (SPE) has approved of reopening prosecution by signing below.

Claim Rejections - 35 USC § 101

5. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

Art Unit: 2195

6. Claims 24-29 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter.

7. Claims 24-29 are rejected for claiming a data structure comprising a mere arrangement of data (i.e. nonfunctional descriptive material). When nonfunctional descriptive material is recorded on some computer-readable medium, in a computer or on an electromagnetic carrier signal, it is not statutory since no requisite functionality is present to satisfy the practical application requirement. Merely claiming nonfunctional descriptive material, i.e., abstract ideas, stored on a computer-readable medium, in a computer, or on an electromagnetic carrier signal, does not make it statutory (See MPEP 2106.01).

8. Furthermore, the data structure as claimed in claims 24-29 does not conform to the present definition of a data structure currently accepted by the Office. The data structure of claims 24-29 does not clearly provide a physical or logical relationship among data elements, *designed to support specific data manipulation functions* (See MPEP 2106.01).

Claim Rejections - 35 USC § 103

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

10. Claims 1-45 are rejected under 35 U.S.C. 103(a) as being unpatentable over Banga et al. ("Resource containers: A new facility for resource management in server systems", USENIX Association, Third Symposium on Operating Systems Design and Implementation, OSDI, 1999, pgs 45-58).

11. Regarding claim 1, Banga teaches a computer-readable storage medium storing program instructions, computer-executable to perform operations comprising:

encoding an association of a computer resource and a resource management policy for the computer resource (pg 49, "4.1 Resource containers", paragraphs 1-2; wherein 'resource containers' are created, which contain system resources and attributes used to provide scheduling parameters, resource limits, (i.e. resource management policy)); and

binding one or more encapsulated computations to the encoding (pg 49, "4.2 Containers, processes, and threads", paragraphs 1-2; wherein threads are bound).

12. Banga does not explicitly teach executing the one or more encapsulated computations in accordance with the resource management policy. However, it would have been obvious to one of ordinary skill in the art at the time of the invention, that execution according to the resource management policy would be performed. One would be motivated by the desire to execute the system to perform its intended function and design.

Art Unit: 2195

13. Regarding claim 2, Banga does not teach that the encapsulated computations correspond to a collaborative application.

14. However, it is old and well known that collaborative applications are a special type of applications that use threads. Banga clearly teaches the use of applications. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify Banga to teach the use of a collaborative application. One would be motivated by the desire to extend Banga's teachings to collaborative applications.

15. Regarding claim 3, Banga teaches that an encapsulated computation has a state independent of other encapsulated computations (pg 48, column 2, paragraph 1; wherein individual threads are scheduled independently, therefore the each have an independent state).

16. Regarding claim 4, Banga teaches that encoding the association includes instantiating a resource domain structure, wherein the resource domain structure indicates a computer resource (pg 49, "4.1 Resource containers", paragraphs 1-2; wherein 'resource containers' are created).

17. Regarding claim 5, Banga teaches that the encoding further indicates a set of one or more policy actions for the resource, the set of policy actions corresponding to the resource management policy (pg 49, "4.1 Resource containers", paragraphs 1-2; wherein 'resource containers' contain resource limits).

18. Regarding claim 6, Banga does not explicitly teach that a policy imposing isolate installs the set of policy actions in the resource domain structure.

19. It is well known in the art that operating systems and runtime environments such as Java have processes that perform resource management. It would have been obvious to one of ordinary skill in the art at the time of the invention that a process or thread that manages resources would impose the management policies.

20. Regarding claim 7, Banga does not teach that the resource domain structure also indicates a set of one or more triggers for the resource, wherein the set of triggers correspond to respective ones of the set of policy actions.

21. It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Banga to include triggers. It is well known in the art that management policies comprise rules based on inputs that allow for determinations to be made on those inputs.

22. Regarding claim 8, Banga does not teach that the resource domain structure also indicates a reservation on the resource. However, it would have been obvious to one of ordinary skill in the art at the time of the invention to reserve resources. One would be motivated by the desire to ensure that there was some level of guaranteed resources availability.

Art Unit: 2195

23. Regarding claim 9, Banga teaches that binding the one or more encapsulated computations with the encoding comprises indicating in a registry each of the encapsulated computations and the encoding (pg 52, column 2, paragraph 3; wherein resource containers enable precise accounting of activities, therefore there exists some registry to enable such accounting).

24. Regarding claim 10, Banga teaches that a dispenser retrieves the policy actions from the resource domain structure and executes the policy actions to handle a resource request for the resource, wherein the dispenser is an isolate that handles requests for the resource (pg 50, "4.3 Resource containers and CPU scheduling", paragraph 3, wherein the scheduler retrieves information from the container to carryout container policies).

25. Regarding claim 11, Banga teaches that binding the one or more encapsulated computations with the encoding comprises indicating to each of the encapsulated computations the encoding (pg 49, "4.2 Containers, processes, and threads", paragraphs 2-3; wherein threads can be bound to different containers depending on need).

26. Regarding claim 12, Banga teaches that the computer resource includes physical and logical computer resources (pg 49, "4.1 Resource containers", paragraph 1).

Art Unit: 2195

27. Regarding claim 13, it is the computer-implemented method claim of claims 1 and 3 above. Therefore, it is rejected for the same reasons as claims 1 and 3 above.

28. Regarding claim 14, Banga teaches that the encoding indicates the computer resource (pg 49, "4.1 Resource containers", paragraph 1).

29. Regarding claim 15, Banga teaches that the encoding further indicates a set of one or more policy actions corresponding to the resource management policy, wherein execution of the set of policy actions causes a policy decision to be generated for the computer resource (pg 49, "4.1 Resource containers", paragraphs 2-3; wherein scheduling decisions are made on the basis of resource container attributes).

30. Regarding claim 16, Banga teaches that a dispenser isolate retrieves the set of policy actions from the encoding and executes the set of policy actions to invoke a policy imposing isolate (pg 49, "4.1 Resource containers", paragraph 3; wherein the kernel and system scheduler work to schedule threads associated with the container).

31. Regarding claim 17, Banga teaches that the encoding also indicates availability of the computer resource (pg 51, column 1, "Container usage information").

32. Regarding claim 18, Banga does not teach that the encoding also indicates a reservation on the computer resource. However, it would have been obvious to one of

Art Unit: 2195

ordinary skill in the art at the time of the invention to reserve resources. One would be motivated by the desire to ensure that there was some level of guaranteed resources availability.

33. Regarding claims 19-20, Banga does not explicitly teach that the resource management policy is defined by a policy imposing isolate that installs the resource management policy in the encoding.

34. Well It is well known in the art that operating systems and runtime environments such as Java have processes that perform resource management. It would have been obvious to one of ordinary skill in the art at the time of the invention that a process or thread that manages resources would impose the management policies.

35. Regarding claim 21, Banga teaches indicating the encoding in a registry of resource management policy-computer resource association encodings (pg 52, column 2, paragraph 3; wherein resource containers enable precise accounting of activities, therefore there exists some registry to enable such accounting).

36. Regarding claim 22, Banga does not teach indicating the computer resource with generic attributes that at least include disposable, revocable, reservable, and bounded.

37. However it would have been obvious to one of ordinary skill in the art at the time of the invention to modify Jones to indicate the computer resource with generic

Art Unit: 2195

attributes. One would be motivated by the desire to perform resource management more effectively during allocation.

38. Regarding claim 23, it is the method claim of claim 2 above. Therefore it is rejected for the same reasons as claim 2 above.

39. Regarding claim 24, Banga teaches operations on a data structure encoded on one or more machine-readable media, the data structure comprising:

a first operation to indicate a computer resource (pg 51, column 1, "Creating a new container");

a second operation to indicate a resource management policy (pg 51, column 1, "Container attributes"); and

a third operation to indicate availability of the computer resource (pg 51, column 1, "Container usage information").

40. Banga differs from the claimed invention for not teaching that the operations are fields in a data structure. However, it would have been obvious to one of ordinary skill in the art at the time of the invention that fields would exist in order for the operations to pull such information.

41. Regarding claim 25, Banga teaches comprising a fourth operation to indicate an identifier to identify an association between a resource indicated in the first field and a

Art Unit: 2195

resource management policy indicated in the second field (pg 51, column 1, "Container usage information").

42. Regarding claim 26, Banga teaches further comprising a fourth operation to indicate computer resource usage by a set of one or more encapsulated computations bound to the data structure (pg 51, column 1, "Container usage information").

43. Regarding claim 27, Banga teaches that the first field indicates attributes of the computer resource (pg 51, column 1, "Container attributes").

44. Regarding claim 28, Banga does not teach that the computer resource's attributes at least include disposable, revocable, reservable, and bounded.

45. However it would have been obvious to one of ordinary skill in the art at the time of the invention to modify Banga to indicate the computer resource with generic attributes. One would be motivated by the desire to perform resource management more effectively during allocation.

46. Regarding claim 29, Banga does not teach further comprising a fourth field to indicate a reservation of the computer resource. However, it would have been obvious to one of ordinary skill in the art at the time of the invention to reserve resources. One would be motivated by the desire to ensure that there was some level of guaranteed resources availability.

47. Regarding claim 30, Banga teaches a computer-readable storage medium storing program instructions executable to perform operations according to claim 1 above.

48. Banga does not teach preventing the binding of two encapsulated computations with the same resource. However, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify Banga to include preventing the binding of two encapsulated computations with the same resource. One would be motivated by the desire to perform computer resource protection or isolation.

49. Regarding claim 31, Banga teaches that the resource domain structures identify their resource domain and indicate resources and associated resource management policies (pg 49, "4.1 Resource containers", paragraphs 1-2; wherein containers indicate the resource and policies).

50. Regarding claim 32, Banga does not teach that each of the resource domain structures indicate generic attributes of their computer resource that at least include disposable, revocable, reservable, and bounded.

51. However it would have been obvious to one of ordinary skill in the art at the time of the invention to modify Banga to indicate the computer resource with generic attributes. One would be motivated by the desire to perform resource management more effectively during allocation.

52. Regarding claim 33, Banga teaches that the resource domain structures indicate usage of their computer resource (pg 51, column 1, "Container usage information").

53. Regarding claim 34, Banga does not teach that the resource domain structures indicate reservations on their corresponding computer resource. However, it would have been obvious to one of ordinary skill in the art at the time of the invention to reserve resources. One would be motivated by the desire to ensure that there was some level of guaranteed resources availability.

54. Regarding claim 35, Banga teaches the computer-readable storage medium comprising program instructions according to claims 1 and 3 above.

55. Regarding claim 36, Banga teaches that the resource domain class definition provides a routine for determining current usage corresponding to an instance of the resource domain class (pg 51, column 1, "Container usage information").

56. Regarding claim 37, Banga teaches one or more routines for unconsuming computer resources (pg 51, column 1, "Container release").

57. Regarding claim 38, Banga teaches one or more routines for attempting to consume a given amount of a computer resource, with the possibility of success or

Art Unit: 2195

failure (pg 49, "4.2 Containers, processes, and threads", paragraph 1; wherein threads consume resources, therefore they must be routines for such threads to attempt to consume such resources).

58. Regarding claim 39, Banga teaches one or more routines for indicating computations bound to a given resource domain class instance (pg 52, column 2, paragraph 3; wherein it is inherent that routines exist to determine which computations are using the resources in order that accurate accounting be performed).

59. Regarding claim 40, Banga teaches a sequence of instructions to regulate association of computations with instances of the resource domain class, wherein each instance of the resource domain class indicates different resources (pg 50, "4.3 Resource containers and CPU scheduling", paragraphs 4-6; wherein threads are bound to multiple containers and scheduled accordingly).

60. Regarding claim 41, Banga teaches a sequence of instructions to associate resource domain class instances with dispensers that handle resource requests separately from implementation of the resource (pg 50, "4.3 Resource containers and CPU scheduling", paragraphs 4-6; wherein schedulers are separate from the kernel).

61. Regarding claim 42, Banga teaches an apparatus according to claims 1 and 3 above, further comprising:

Art Unit: 2195

a memory (pg 50, column 2, "4.4 Other resources", paragraph 1).

62. Regarding claim 43, Banga teaches that the resource management policy comprises one or more policy actions that provide policy decisions to computer resource requests (pg 49, column 2, "4.1 Resource containers", paragraph 2; wherein resource limits help provide policy decisions to the system scheduler).

63. Regarding claim 44, Banga does not teach that the resource management policy further comprises triggers that gate execution of policy actions.

64. It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Banga to include triggers. It is well known in the art that management policies comprise rules based on inputs that allow for determinations to be made on those inputs.

65. Regarding claim 45, Banga teaches means for indicating usage of the computer resource (pg 51, column 1, "Container usage information").

Response to Arguments

66. Applicant's arguments with respect to claims 1-45 have been considered but are moot in view of the new ground(s) of rejection.

Art Unit: 2195

Conclusion

67. Any inquiry concerning this communication or earlier communications from the examiner should be directed to ERIC C. WAI whose telephone number is (571)270-1012. The examiner can normally be reached on Mon-Fri, 9am-5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Meng - Ai An can be reached on 571-272-3756. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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